

# INNOVATION AND FUTURE OF THE INDUSTRY IN ANTWERP



The diamond industry historically has not been what one might consider a hotbed of innovation by any stretch of the imagination. Diamonds have essentially been mined, sold and polished in much the same way for a hundred years, while its trading methods have been borderline anachronistic. Change, however, is on the way. Note, for instance, that innovation was not even a theme in our 2014 Sustainability Report, receiving hardly a mention. The situation is different these days. Innovation typically fits into the context of other, more pressing issues, but has grown in importance, and deserves our attention. Indeed, the future growth and sustainability of the Antwerp industry, as in any industry, depends on innovation, including the transmission of skills. Those that initiate change will have a better opportunity to manage the change that is inevitable.

Well-managed, innovation in the diamond industry in Antwerp can offer a contribution to SDG 4: "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" especially via

- **Target 4.3:** By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university
- **Target 4.4:** By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
- **Target 4.7:** By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development



To SDG 8: “Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all” via:

- **Target 8.2:** Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors
- **Target 8.3:** Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

To SDG 9: “Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation” via

- **Target 9.4:** By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
- **Target 9.5:** Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

To SDG 17: “Strengthen the means of implementation and revitalize the global partnership for sustainable development” via

- **Target 17.6:** Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism
- **Target 17.7:** Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed
- **Target 17.16:** Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries
- **Target 17.17:** Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships

Why do we need innovation? In which aspects of the industry can it be most useful? The most likely areas that would benefit from innovation include screening and tracking stones, and tools for optimizing cutting. It can offer certainty, efficiency, safety, and so on. But does it lead to new or less employment?

A persistent challenge Antwerp and the wider industry faces is that the diamond trade is considered old-fashioned, and thus suffers from a shortage of skilled young people, while labor costs are comparatively high. Today, there is a great opportunity to modernize the industry and foster the development of talented individuals that can use new technology by providing up-to-date schooling.

Innovation in the industry is currently fragmented, scattered across isolated initiatives and various commercial devices. Some initiatives however, such as track and trace technology, are gaining more widespread participation. In Antwerp, technological developments often happen behind closed doors. Given that AWDC is not a technology company with a vested interest in highlighting its tech advances, this is understandable, but communication about its achievements could be more effective. As one stakeholder stated in his interview, “Technology is a competitive advantage of Antwerp compared with other trading centers.”

The AWDC’s efforts to safeguard the future of the diamond industry in Antwerp by means of innovative solutions can be categorized into three themes: services, information and knowledge-sharing, and technology.

## SERVICES

### TRAINING ON THE LOCAL AS WELL AS INTERNATIONAL LEVELS

The AWDC supports and promotes technical and vocational training for municipal school students (Target 4.3, 4.4) and their placement in internships in the Antwerp diamond community, designed to maintain the level of knowledge and skill in Antwerp as well as contribute to local employment by ensuring those skills are relevant. We make available training in diamond polishing, sorting and planning so those students obtain hands-on experience. The impact AWDC has with regard to student training depends on the number of students following technical courses that would lead them toward a career in the diamond industry. Over the last years (2012-2018), 61 sixth and seventh-year students registered to take courses, after which 51 internships were arranged and 25 participants followed training for experienced polishers.

AWDC's training services also extend to capacity building for ASM (artisanal and small-scale) miners (Target 4.7), in partnership with the Diamond Development Initiative (see, Economic Impact in diamond-producing countries). These programs have a direct impact on the ability of participants to acquire the knowledge and skills needed to develop a sustainable activity in their home country.

### ONLINE JOB PLACEMENT (AD JOBS)

The AWDC HR Department has for several years provided a job placement service dedicated to the diamond industry, to assist its companies in finding talent and talent in finding jobs. This service has grown steadily over the past four years. The total number of registered job-seekers has nearly doubled in that time frame, from 6,500 to 12,850, as has the number of job-seekers that have filled out applications, from 3,600 to 7,900. The job site has now helped 246 people find employment, and has enabled the industry to fill 440 vacancies. This is one way AWDC helps those that wish to join the industry to find gainful employment in the industry.

## INFORMATION AND KNOWLEDGE-SHARING

One of the main tools directly at the disposal of AWDC for spurring innovation is to raise awareness of relevant developments and disseminate knowledge to those inside as well as outside the Antwerp diamond community.



Antwerp Summer University

The programs we organize may not lead to immediate results but are part of our efforts to foster a mentality of openness to change. They foster a 'soft' form of influence to encourage members of the Antwerp trade to embrace innovations that contribute to, for example, Antwerp's reputation, integrity in the diamond value chain, compliance and bankability, among others. Blockchain technology is an example thereof. As one of our stakeholders suggested,

*"Thanks to innovation, one can increase traceability in the diamond pipeline ... AWDC should play an awareness-raising role concerning traceability."*  
- I. Poly.

### ANTWERP SUMMER UNIVERSITY

In 2017, the Antwerp World Diamond Centre and the University of Antwerp hosted the inaugural edition of the "Innovation and Diamonds" conference, featuring specialists from across the spectrum of the diamond trade, from mining to blockchain tech. The conference, taking place in the framework of the Antwerp Summer University program dedicated to the diamond industry, featured eight keynote speakers and five dedicated workshops addressing the latest trends and emerging innovations in the trade, including trade finance instruments. The first edition included 18 participants - mainly Masters and Ph.D. candidates, researchers and young professionals from four continents. The second edition in 2018 increased its participants to 27 and introduced practice-oriented workshops, where the students received hands-on guidance in rough diamond sorting, polished grading and polishing. At the conclusion of the two weeks, the students successfully presented their thesis projects to a jury of U. of Antwerp professors and diamond industry specialists.

**HACK4DIAMONDS**

In 2017, AWDC launched the inaugural edition of Hack4Diamonds, the first ever ‘hackathon’ in the diamond industry. The aim of this innovation-oriented hackathon event was to address contemporary challenges facing the diamond industry by bringing together young innovators, students and start-ups with expertise in computer science, marketing, business management expertise, blockchain, artificial intelligence and more. Together they ‘hacked’ specific pre-defined issues, including: How to turn the challenge of laboratory-made diamonds into an opportunity? What would be the implications and applications of a blockchain system that can trace the provenance (traceability) of a stone as well as diamond transactions?

An implementable model to address the latter question was developed during the hackathon, consisting of a blockchain solution for tracing a diamond from mine to finger (traceability) as well as for monitoring transactions and financing invoices. The project ultimately did not get off the ground, but certainly opened people’s eyes as to what is possible when the industry welcomes young, innovative talent into its realm - a phenomenon that has been sorely missing from the industry. A second concept emerging from the event was a co-working space to bring together different communities and professions - diamond traders, jewellers and designers, marketing experts, etc. - into a single arena to facilitate cross-pollination and open the - traditionally closed - industry to the wider community. This concept is still being pursued and could come to fruition in 2019.



Fenix

**TECHNOLOGY**

The AWDC subsidizes the Scientific and Technical Research Center for Diamond (WTOCD), an independent local company that provides technological solutions to the Antwerp diamond industry, as well as to AWDC’s independent commercial subsidiary, HRD Antwerp. Founded in 1977 to give scientific and technological assistance to the diamond gemstone industry in Belgium, it has developed laboratory-grown diamond detection machines, microscopes and this year unveiled a world premier: FENIX, the first device that enables fully automated polishing of diamonds.

**FENIX, THE FUTURE OF POLISHING**

In 2018, WTOCD introduced a revolutionary technology that could have a profound impact on the diamond manufacturing industry. Called Fenix, it is the first fully automated diamond polishing machine of its kind. Using Computer Numerical Control (CNC), FENIX polishes a diamond in a cold, stable and controlled environment that significantly limits the amount of force applied and delivers precisely the planned outcome of your diamond. The technique enables grain independent polishing, greatly increasing the speed of turning a rough diamond into a polished gem, approximately 10 to 20 times faster than traditional hand polishing.

The machine is nearly ready to be rolled out into commercial production and could very well bring more diamond polishing back to Antwerp. It is too early to say what impact this may have on the wider industry and employment, but it could make a major difference for the future of the industry in Antwerp.



Hackathon

**DETECTION EQUIPMENT, THE ALLY OF INTEGRITY IN THE SUPPLY CHAIN**

Given the fraudulent practice of undisclosed mixing of natural and synthetic diamonds, which is particularly an issue for parcels of melee diamonds, tools that help promote best practices and transparency are most welcome.

The **M-Screen+** is a sophisticated, high-tech screening device developed especially for large amounts of melee diamonds. It is the advanced version of the M-screen, a superfast, automated melee screening device that screens round brilliant diamonds from 0.005 - 0.20 carats for potential lab-grown diamonds, potential HPHT color-enhanced diamonds and simulants. This machine was placed in the diamond bourses as a free service to diamond traders, giving them easy access to a tool that is nowadays essential for any diamond trader.

The **D-Tect** is another first of its kind in the world. It offers a decisive analysis for diamonds that require further testing after being screened by the M-Screen+, or any other screening device.

The **D-Screen** is a portable diamond screening device specifically developed by HRD Antwerp. It distinguishes stones that are not laboratory grown (synthetic) or HPHT colour enhanced, from stones that are potentially laboratory grown or had their colour improved by means of HPHT.

These detection machines are Antwerp's contribution to the growing repertoire of devices used to keep natural and synthetic diamonds distinguished and maintain consumer confidence in diamonds.

